PATENT SPECIFICATION (11) 1 402 662

1 402 662

(21) Application No. 2645/73 (22) Filed 18 Jan. 1973
(23) Complete Specification filed 13 Dec. 1973
(44) Complete Specification published 13 Aug. 1975
(51) INT. CL.[2] B60K 20/04
F16H 5/04
(52) Index at acceptance
F2D C043 C047 C054

(72) Inventor JOHN LEWIS

(19)

(54) IMPROVEMENTS IN OR RELATING TO GEAR CHANGE MECHANISMS

(71) We, CHRYSLER UNITED KINGDOM LIMITED, a British Company, of Bowater House, 68 Knightsbridge, P.O. Box 441, London, S.W.1., do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to gear change mechanisms for motor vehicle gearboxes and is particularly, although not exclusively, applicable to gear change mechanisms for gearboxes of transversely mounted engines.

The invention provides a gear change mechanism comprising a gear lever having a gear selector rod connected to one end thereof, means to support the gear lever adjacent said end for pivotal movement in two planes lying normal to each other so that movement of the lever in one plane rotates the selector rod and movement in the other plane displaces the rod lengthwise of the rod, means to mount the gear lever support means to constrain the latter to move in an arcuate path about an axis which is at or near the other end of the gear lever in one position of its movement and connecting means linking the gear lever mounting means to the gearbox and/or engine unit so that movement of the latter moves the lower end of the gear lever about said axis when the gear lever is in said one position thus avoiding any substantial movement of said other end of the gear lever when the latter is in said one position due to gearbox and/or engine unit movement.

Preferably the gear lever support means comprises an arm, a pivotal mounting at one end of the arm supporting the gear lever adjacent said one end of the lever to pivot in one plane and a pivotal mounting at the other end of the arm pivotally mounting the arm and gear lever on said support means to pivot in a second plane transverse to said one plane.

In one specific embodiment of the invention the guide means comprise a pair of pivotally mounted links between which the mounting means for the gear lever is supported, said links converging towards their pivotal mountings, the arrangement being such that the arm supported between said links pivots about an axis which is at or near said other end of the gear lever in one position of the lever.

In an alternative embodiment the mounting means for the gear lever are guided for movement in an arcuate slot the centre of which is at the said other end of the lever when the latter is in said one position.

Preferably said one position of the gear lever is a neutral position in which no gear in the gearbox is engaged.

The following is a description of some embodiments of the invention, reference being made to the accompanying drawings in which:

Figure 1 is a side elevation view with certain parts cut away of a gear change mechnism for a motor vehicle gearbox;

Figure 2 is a plan view of the mechanism;

Figure 3 is a section on the line 3-3 of Figure 1;

Figure 4 is a similar view of the mechanism to Figure 1 to which a position of the mechanism when displaced by gearbox movement has been added in chain line;

Figure 5 is a side elevation view of a modified form of the mechanism, and

Figure 6 is a cross-sectional view of a further modified part of the mechanism.

A gearbox of a transversely mounted front engine is indicated in outline form at 10. The engine mountings permit certain movement of the engine-gearbox unit due

to torque reaction and the general path of such movement of the gear box is indicated by the arrow 11.

Gear change is effected by a rotatable and axially movable selector shaft 12 extending rearwardly of the gearbox and having a fork 13 at its rearward end which receives and is pivotally connected to the lower end of a generally upright gear lever 14 by a pin 15. The gear lever which is shown in the neutral position is supported for pivotal movement in both fore and aft sense and in a transverse sense to move the shaft 12 axially and rotate the shaft by an arm 16 pivotally connected to the gear lever by a pin 17.

Above the arm 16 the gear lever extends through an opening 18 in the vehicle floor indicated at 19 and is cranked rearwardly. The upper end of the arm carries a knob 20 the centre of which lies at a point 21.

The mounting for the other end of the arm 16 will now be described. Rearwardly of opening 18 an inverted channel 22 is bolted to the underside of the floor. Two spaced shafts 23 extend across and are welded to the sides of the channel.

Each shaft has a pair of links 24 pivotally mounted on the ends thereof. The links hang downwardly of the shafts and the lower ends of each pair of links are connected together by shafts 25.

The lower ends of the two pairs of links are attached together by further links 26 the lengths of which are such that the pairs of links 24 converge towards their upper mounting points. The shafts 25 are connected together between the links by a further shaft 27. The arrangement is such that a line 28 drawn to bisect shaft 27 perpendicularly also passes through the point 21 of the centre of the gear lever knob. Furthermore the length and degree of convergence of the links 24 is selected so that for relatively small pivotal movements of the assembly, such as indicated in Figure 4 to which reference will be made later, the shaft 27 carried by the links pivots about or substantially about point 21. Thus the arm 16 supported on the shaft also swings about point 21.

As indicated earlier, one end of arm 16 supports the gear lever and the other end of the arm is formed with a boss 29 which is rotatably mounted on the shaft 27. It will be seen that shaft 27 is axially aligned with the selection shaft 12 so that movement of the gear lever in a transverse plane rotates the lever about shaft 27 and in so doing rotates shaft 12.

One of the further links 26 has a forwardly extending lug 30 which is pivotally connected to a rod 31 extending parallel to shaft 12 and pivotally connected about a horizontal axis to a bracket 32 secured to the gearbox wall. Thus the aforesaid movement of the gearbox is transmitted to and pivots the links 24.

Thus when the gearbox moves as indicated at 11 the movement is transmitted to the mounting for the arm 16 which, as indicated earlier pivots about point 21 so that the arm 16 and pivot 17 for supporting the gear lever also pivot about point 21. The lower end of the gear lever is moved an equivalent amount to the movement of the mounting for the arm and so the angular relationship between the gear lever and arm 16 remains constant throughout said movement. The movement of the gear lever is therefore a pivotal movement about 21 and thus the knob remains unmoved or substantially unmoved despite movment of the gearbox.

When a gear is selected the knob is moved away from point 21 and so the compensation at the gear knob provided by the movement of arm 16 in response to gearbox movement is reduced.

Figure 5 shows a modified arrangement in which the links 24 are replaced by two L-section plates 35 having arcuate slots 36 struck about point 21 in which the shafts 25 slide.

Figure 6 shows a modification to the arrangement of Figures 1 to 4 in which the channel 22 is replaced by two spaced L-section members 37 to which the shafts 23 are welded.

WHAT WE CLAIM IS:—

1. A gear change mechanism comprising a gear lever having a gear selector rod connected to one end thereof, means to support the gear lever adjacent said end for pivotal movement in two planes lying normal to each other so that movement of the lever in one plane rotates the selector rod and movement in the other plane displaces the rod lengthwise of the rod, means to mount the gear lever support means to constrain the latter to move in an arcute path about an axis which is at or near the other end of the gear lever in one position of its movement and connecting means linking the gear lever mounting means to the gearbox and/or engine unit so that movement of the latter moves the lower end of the gear lever about said axis when the gear lever is in said one position thus avoiding any substantial movement of said other end of the gear lever when the latter is in said one position due to gearbox and/or engine unit movement.

2. A gear change mechanism as claimed in claim 1 wherein the gear lever support means comprise an arm, a pivotal mounting at one end of the arm supporting the gear lever adjacent said one end of the lever to pivot in one plane and a pivotal

mounting at the other end of the arm pivotally mounting the arm and gear lever on said support means to pivot in a second plane transverse to said one plane.

3. A mechanism as claimed in claim 1 or claim 2 wherein the guide means comprise a pair of pivotally mounted links between which the mounting means for the gear lever is supported, said links converging towards their pivotal mountings, the arrangement being such that the arm supported between said links pivots about an axis which is at or near said other end of the gear lever in one position of the lever.

4. A mechanism as claimed in claim 1 or claim 2 wherein the mounting means for the gear lever are guided for movement in an arcuate slot the centre of which is at the other end of the lever when the latter is in said one position.

5. A mechanism as claimed in any of the preceding claims wherein the said one position of the gear lever is a neutral position in which no gear of the gear box is engaged.

6. A gear change mechanism substantially as described with reference to and as illustrated in Figures 1 to 4 or Figures 1 to 4 as modified by Figure 5 or Figure 6 of the accompanying drawings.

BOULT, WADE & TENNANT,
Chartered Patent Agents,
34 Cursitor Street,
London, EC4A 1PQ.

Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd., Berwick-upon-Tweed, 1975.
Published at the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

1402662 COMPLETE SPECIFICATION
3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

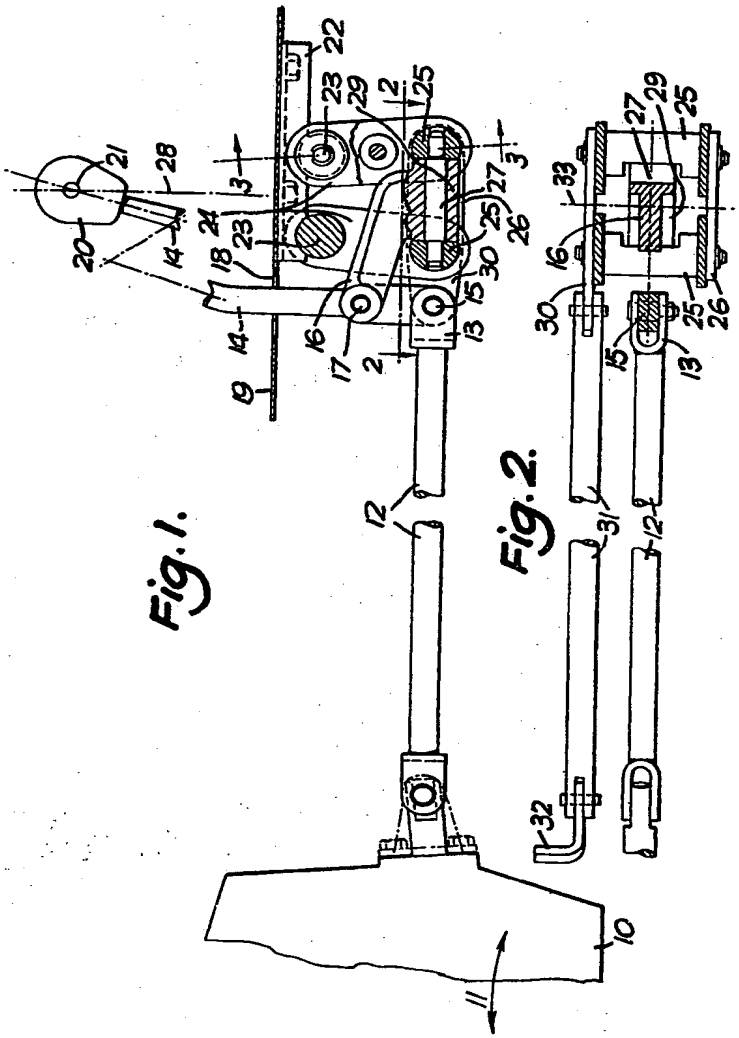

Fig. 1.

Fig. 2.

1402662 COMPLETE SPECIFICATION
3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 2

Fig. 3.

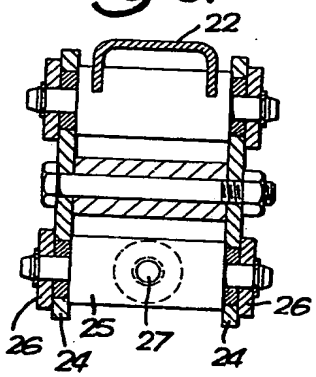

Fig. 4.

Fig.6.

Fig.5.